REMARKS

Independent claim 25 has been amended to add "shrinkage" to the description of the claimed onset temperature. Support for this addition can be found in the specification at page 4, lines 20-23 and page 5, lines 1-2.

INTERVIEW SUMMARY

At the interview conducted on May 23, 2007, the following topics were discussed:

A. THE IDEAL BATTERY LABEL

At the outset of the interview, the "ideal battery label" was described as having the following features:

(1) Securely anchored to the battery casing with lower performance adhesives in a manner that resists secondary shrinkage.

It was explained that secondary shrinkage occurs after the labels have been adhesively secured to and initially shrunk on the battery casings. Labelled batteries undergo secondary shrinkage when exposed to elevated onset shrinkage temperatures during storage, shipment and/or when in use. "Onset" shrinkage temperatures are the temperatures at which films begin to shrink in excess of a threshold of about 2% while in an unrestrained state (as defined in applicants' specification at page 4, line 1, and page 5, lines 1-2). In the normal course of events, batteries in shipping containers in transit to packaging facilities can be exposed to onset shrinkage temperatures on the order of 74°C (165°F), and batteries in flashlights mounted on vehicle dashboards are regularly exposed to onset shrinkage temperatures on the order to 60°C (140°F). When exposed to such elevated temperatures, conventional battery labels are known to undergo secondary shrinkage.

Secondary shrinkage can cause seam openings, with resulting exposure of adhesive, and so called "dog ears", a term used in the industry to describe the lifting of the label edges that overlap the ends of the battery.

One of the applicants, Philip R. Emery, showed the examined examples of conventional batteries that had been exposed to onset shrinkage temperatures on the order of 160°F (71°C). The labels on several of these batteries displayed seam openings with exposed adhesives, and dog ears.

Lower performance water based adhesives are less costly than the higher performance solvent based adhesives, the latter also being more expensive to process due to the need to recover or incinerate evaporated solvents.

(2) Reduced Thickness

Reduced label thickness makes possible a reduction in material costs, while also allowing the diameter of the battery casing (and its internal volume) to be maximized for a given battery O.D.

(3) Optimum Stiffness

The stiffness of the label should be high enough to accommodate efficient separation from the release liner at high labeling speeds, yet low enough to resist any tendency of the label to "spring back" and lift off of the battery casing.

(4) Shrinkage in a first direction accompanied by growth in a second direction.

Shrinkage in a first direction allows the label to be tightly applied to the battery casing without resulting wrinkles, whereas growth in the second direction avoids the creation of dog ears.

B. THE BATTERY LABEL OF THE PRESENT INVENTION AS DEFINED BY CLAIM 25

An explanation was then provided of why the battery label of the present invention, as defined by claim 25, incorporates each of the above features and attributes of the ideal label.

To begin with, the battery label of the present invention includes a polymeric film that is dimensionally stable at temperatures below an onset shrinkage temperature of at least about 75°C.

This avoids secondary shrinkage of the labels at temperatures below this onset shrinkage temperature, which in turn avoids exposure of adhesive at the overlapped seams, and also makes it possible to securely anchor the labels with lower performance adhesives.

Lower performance adhesives have a lower level of release off of the release liner, and thus the film component of the present invention can have a lower stiffness of between about 1 to 20 grams.

A lower stiffness makes it possible to employ thinner films having thicknesses of between about 0.01 to 0.05mm. Such thinner films decrease material weight and costs, while also making it possible to maximize the diameter of the battery casing and its internal volume.

The film component of the present invention is thermally shrinkable in a first direction with accompanying growth in a second direction. This beneficially avoids "dog ears".

These features are interrelated and coact to qualify the label of the present invention as an ideal battery label.

C. THE SHORTCOMINGS OF THE PRIOR ART

Each of the cited prior art references was then reviewed and compared to the present invention as defined by independent claim 25.

Regarding Lin et al., it was pointed out that the disclosed shrinkage temperatures of 204-250°F were not onset shrinkage temperatures, but rather were much higher temperatures at which Lin et al.'s polypropylene film could be expected to shrink by about 20%. This is shown in Lin et al.'s Figure 6 and described at col. 4, lines 49-56. Lin et al.'s onset shrinkage temperature is far lower, as shown in Figure 6, and as evidenced by the shrinkage of Lin et al.'s film when adhered to a substrate (as opposed to being unrestrained) and exposed to temperatures of 160°F (71°C) (see col. 3, lines 58-68) and col. 4, lines 1-14). As explained by Mr. Emery during the interview, the claimed onset shrinkage temperature of 75°C of the present invention is significantly and advantageously higher than that taught by Lin et al. As also explained by Mr. Emery, in order to minimize shrinking and seam separation at Lin et al.'s

lower onset shrinkage temperature, the Lin et al. label must be anchored with a high performance adhesive, a disclosed example being Aroset 1860-2-45. Again according to Mr. Emery, although Lin et al. does not disclose stiffness values, because of the use of a high performance adhesive, the stiffness of the Lin et al. polypropylene film is likely to be well above the range of the present invention as defined by claim 25.

Lastly, Lin et al. fails to disclose or suggest shrinkage in one direction accompanied by growth in another direction.

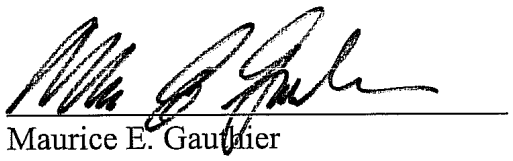
The Ast and Hughen references were also discussed, and it was pointed out that both lack any disclosure or suggestion of applicants' relatively high onset shrinkage temperature of 75°C, or applicants' optimum stiffness range of 1 to 20 grams, as claimed in claim 25.

C. SUMMARY

The label of the present invention, as defined by independent claim 25, incorporates a combination of critical characteristics essential to the provision of an ideal battery label. These include a relatively high onset shrinkage temperature of 75°C, a minimum thickness of between about 0.01 to 0.5mm, an optimal stiffness in one direction of between about 1 to 20 grams, and shrinkage only in a first direction accompanied by growth in a second direction when heated to temperatures above the onset shrinkage temperature. None of the cited references discloses or suggests applicants' high onset shrinkage temperature. Moreover, the cited references, either when taken singly or in combination, fail to disclose applicants' unique combination of critical characteristics.

Accordingly, absent the discovery of new and more pertinent prior art, it is now believed that this application is in condition for allowance.

Respectfully submitted,



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